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FREQUENCY AND AMBIGUITY EFFECTS IN THE MENTAL LEXICON IN HUNGARIAN

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In three experiments we addressed questions about the organization of representations in the mental lexicon and morphological processes and lexical access of multimorphemic words. We tested wether complex words are decomposed into their constituent morphemes during online word recognition. We examined several factors that might influence the way complex word forms are accessed, namely surface and stem frequency, ambiguity, and regularity. In addition, we compared two methods frequently used in psycholinguistic experiments: the lexical decision task and morphological priming, to see whether they reflect the same underlying processes.

In Experiment 1 and 2 the lexical decision task was used to determine whether ambiguous suffixes influence lexical access and representation of regular inflected noun forms, irregular nouns, and regular ambiguous stems in disambiguated and ambiguous suffixed forms. Experiment 3 tested morphological priming between regular inflected forms and stems, comparing the effects of inflected forms, inflected

controls and stem identity primes in the facilitation of their stem morpheme. We tested inhibitory and facilitating links between the two readings of noun-verb homonyms. Our main questions and findings are listed below.

1) Do homonym suffixes influence the access and representation of regular inflected forms?

Forty regular inflected words were selected that ended either the non-ambiguous nominal suffix (*-ból*) or the homonym suffix (*-nak*), which has a nominal and a verbal reading. Half of the words had a low stem frequeny (6-8 / million), and half of them had a higher stem frequency (78-115 / million). All the inflected forms had the same surface frequency (0,23 / million). Reaction times to forms with non-ambiguous suffixes were determined by the stem frequency, while form ending in the ambiguous suffix showed surface frequency effects. Correlation between decision latencies and frequency measures showed the same pattern. The results are interpreted as decomposed access for regular inflected forms with non-ambiguous affixes, and full-form storage for regular forms containing an ambiguous suffix.

2) Are frequent regular inflected forms represented decomposed or as full forms?

Forty of the most frequent nouns in Hungarian were chosen and used with the above mentioned non-ambiguous or ambigous suffix.The forms differed in surface frequency: half of them had a lower surface frequency (1,9-4,6 / million), the other half were more frequent (16,2-19,4 / million), while they all had approximately the same root frequency (630-730 / million). Analyses of variance revealed that suffix ambiguity had no effect, reaction times varied with surface frequency, namely frequent word forms were responded faster. The results suggest full-form access in case of frequent inflected forms.

3) Are regular and irregular forms processed differently?

An irregular word class was chosen which have an alternating phoneme in regular and irregular forms. Some affixes might change the root in Hungarian, while others cannot. Twenty irregular roots were tested with the above mentioned non-ambiguous and homonym suffix that never change the root morpheme, so these forms were exactly like the regular forms. Reaction times revealed that irregular roots even in regular forms show surface frequency effects in visual lexical decision, suggesting full-form access. When the irregular plural forms of the same roots were tested, reaction times significantly increased, although these irregular plural forms are much more frequent than the regular suffixed forms. We interpreted longer reaction times as signs of increased processing load.

4) Are both readings of homonym roots are accessed in ambiguous and non-ambiguous inflected forms?

Ten noun-verb homonyms were selected and presented in three forms: with disambiguating nominal suffix, with disambiguating verbal suffix, and homonym suffix that leaves the inflected form ambiguous. Nominal and ambiguous forms were accessed via full forms. Reaction times correlated with surface frequency. In the case of ambiguous inflected forms correlation reveled that both readings were probably activated because while nominal reading facilitated decision, verbal reading had an inhibitory effect. The pattern of results suggest that ambiguous inflected forms were interperted as nouns, supposedly because unintendedly the test material might have created an expectation of noun froms. In opposition, disambiguated verbal forms were accessed via the root, and decision latencies correlate only with verbal root frequency.

5) Do experimental methods reveal the same underlying lexical processes?

The same test material was used in Experiment 3 as in Experiment 1 to compare the pattern of results obtained by visual lexical decision and cross-modal morphological priming. In Experiment 3 regular inflected forms with ambiguous and non-ambiguous suffix both facilitated their stem compared to control, suggesting decomposed access of both forms. So the same word forms behaved differently tested in lexical decision and morphological priming. While suffix ambiguity increased processing time in lexical decision, it showed no effect on morphological priming. On the contrary, in the priming procedure only the frequency of morphological components mattered. Compared to stem identity priming, stems were responded slower when the prime was an inflected form of the stem. The increase in repsonse latency was greater in the case of the less frequent non-ambiguous affix.

The differences of lexical decision and morphological priming are explained by the different underlying processes measured. Lexical decision is a task that needs explicit processing of and decision about a word form. Priming is an implicit task and requires no explicit evaluation of the prime, but reflects automatic spreading activation from decomposed morphemes. Lexical decision probes a later stage of processing when decomposed elements are integrated. In the integration of form and meaning ambiguity and irregularity might cause difficulties for the morphological processor, that is why response latencies increase and full-form representations are available in the mental lexicon. Parallel route models propose that both parsing and whole-word access routes are available and when parsing proves to be difficult, whole-word representations are formes beside morpheme representations.